ENVIRONMENTAL SERVICES

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June 4, 2012

Mr. Jeff Scott, Director
Waste Management Division
United State Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, California 94105

SUBJECT: APPLICATION FOR ALTERNATIVE DECONTAMINATION AND SAMPLING OF POLYCHLORINATED BIPHENYLS IN ACCORDANCE WITH TITLE 40, CODE OF FEDERAL REGULATIONS (CFR), SECTION 761.79(h).

Dear Mr. Scott,

On behalf of the United States Coast Guard (USCG), NRC Environmental Services Inc. (NRCES) submits this application to the United States Environmental Protection Agency, Region 9 (EPA) for approval of alternative decontamination and sampling of the interior of four (4) 21,000 gallon coated frac tanks that once contained polychlorinated biphenyl (PCB) contaminated liquids. The PCB contaminated liquids were generated resulting from an emergency response related to an abandoned and sinking tug boat identified as Tug Tiger that occurred on December 11, 2011 near Point Richmond, Contra Costa, CA.

NRCES has prepared a written decontamination procedure and Otis Institute has prepared an alternative sampling plan and together have conducted a demonstration / validation study that the proposed decontamination method, confirmed by Otis Institute alternate sampling plan data documents, indicating a 99.99% upper confidence level (UCL) that any additional wipe samples would have a worse-case PCB concentration $\leq$5.55 µg/swipe (100 cm^2). This exceeds the requirements of the of 40 CFR 761.79 (b)(3)(i)(A), which states that, for non-porous surfaces previously in contact with liquid PCBs at any concentration, must be $\leq$10 micrograms PCBs per 100 square centimeters ($\leq$10 µg/100 cm^2) as measured by a standard wipe test. More accurately, with the presence of known Aroclors accounted for, there is a 99.99% chance that the concentration of PCB 1.61 µg/swipe (100 cm^2) by statistics since there are 5 wipes composited **(Attachment A – *Alternative Sampling Plan and Pilot Test Results*, Otis Institute, May 25, 2012)**.

PROJECT BACKGROUND

The information provided in this section are excerpts from the Waste Management Plan, Rev 02, dated April 5, 2012 prepared for the USCG and provided to EPA Region 9 personnel Ms. Carmen Santos and Steve Armann. The Attachments referenced in this section are not provided in this document. However, complete copy of the Waste Management Plan with all Attachments will be provided if requested.

On Sunday, December 11, 2011, the USGS requested NRCES to respond to the release of oil into the Richmond Graving Dock. The source of the release was the sinking tug boat "TIGER". Once at the Richmond Graving Dock, NRCES deployed skimming equipment, boom, and complimenting resources to contain the release. The NRCES Project Manager assigned was Rich Betta.

In order to remove the contaminated water from the release site, NRCES deployed oil absorbent booms and pads, and skimmed oil from the surface waters. Oily water that was removed from the area was temporarily transferred into a vacuum tanker. From the vacuum tanker, the oily water was transferred into 275-gallon intermediate bulk containers (totes). Once the vacuum tanker was empty, the interior of the holding tank was pressure washed and the resulting wash water was accumulated into the totes, as well. Other solid waste associated with the clean up (booms, pads, PPE, etc.) was accumulated in lined bins. The abovementioned abatement process, including cleaning of the vacuum tanker took twenty-one days; ending on January 1, 2012.

Approximately 625 gallons (4 totes) of oily water was collected from the release. The oily water from the totes was transferred into a 70-barrel vacuum truck for off-site disposal. On January 6, 2012 the oily water was profiled to Evergreen Oil, Inc. and shipped under Uniform Hazardous Waste Manifest No. 008992025JJK using the Emergency Response EPA Identification Number assigned to Contra Costa County (CAS 111 111 007).

Once at the Evergreen Oil disposal site, the oily water was tested in accordance with Evergreen Oil, Inc. Waste Acceptance Plan. The analysis revealed that the oily water contained Polychlorinated Biphenyls (PCBs) at a concentration of 7 milligrams per kilogram (mg/kg or ppm), exceeding the thresholds allowed under Evergreen Oil's permit. The shipment was rejected and returned to the site, at which time it was transferred to the original 4 totes to be profiled and shipped to an alternate off site waste facility. The 70-barrel vacuum tanker was decontaminated and the wash water was added to the totes.

An assessment to determine the location and concentration of PCBs was immediately requested by the USCG, and Global Diving & Salvage was directed to collect samples from the TIGER vessel using a sampling method approved by the California Department of Fish and Game. Samples were collected over a period of two days, from February 7 through February 9, 2012. Torrent Laboratories received the samples on February 10, 2012. The results of the sample analysis reported the presence of PCBs in multiple areas of the TIGER vessel (see **Attachment 1 – Torrent Laboratories Analytical Report, Dated February 14, 2012**).

Based on the analytical report, the USCG developed the **Tug Tiger Tank Cleaning Plan**, dated February 18, 2012 (see **Attachment 2**). Although the report identified the location and concentration of PCBs, the actual source of the PCBs could not be determined. One potential source has been identified as fuel from the electrical equipment on board.

Global Diving & Salvage transferred contents of TIGER inboard tanks into six frac tanks on pier No. 1. USCG then contracted NRCES to dispose of the six frac tanks. **Table 1** (below) summarizes the quantity and PCBs concentrations that were stored in the frac tanks.

Table 1. is a summary of the Analytical Report of the PCB concentration only, no other target analyte or flash point meet the federal or state hazardous waste standards.

TABLE 1
SUMMARY OF ANALYTICAL RESULTS OF THE FRAC TANKS FOR PCBs

Tank ID	Source[1]	Sample Identification	Concentration of PCB by Phase	Reporting Limit
Tank A4409	0-5	Tiger 03 - Oil	<20[2] mg/kg	2.0 mg/kg
		Tiger 04 - Water	<25[3] µg/l	0.5 µg/l
Tank A1396	0-5	Tiger 07 - Oil	<2.0 mg/kg	2.0 mg/kg
		Tiger 08 - Water	<0.5 µg/l	0.5 µg/l
Tank A3650	0-5	Tiger 09 - Water[3]	<0.5 µg/l	0.5 µg/l
Tank SV28209	7[4]	Tiger 01 - Oil	12 mg/kg	2.0 mg/kg
		Tiger 02 - Water	6.0 µg/l	0.5 µg/l
Tank A3427	5-50	Tiger 05 – Oil	6.8 mg/kg	2.0 mg/kg
		Tiger 06 - Water	1.2 µg/l	0.5 µg/l
Tank A3641	>50	Tiger 10 – Oil	4.1 mg/kg	2.0 mg/kg
		Tiger 11 - Water	<0.5 µg/l	0.5 µg/l

[1] The source is based on the Analytical Report from the samples collected from Global Diving & Salvage (Attachment 1). Tank and wash water were placed into the frac tanks by assigned PCB concentrations such as 0-5 mg/kg, 5-50 mg/kg, 7 mg/kg, or >50 mg/kg. For example, the two samples that reported the highest concentration of PCBs (C-2 and C-4) were transferred into frac tank A3641 and no other water or wash water from other location in Tug Tiger were added to that frac tank.

[2] Sample was diluted due to matrix interference.

[3] No distinctive oil layer existed in Tank A3650 – only a water phase with a slight sheen.

[4] This source was additional oil-water from the oil skimming operation where PCBs were detected by Evergreen Oil Inc. at 7 mg/kg.

ALTERNATE DECONTAMINATION AND SAMPLING APPROVAL REQUEST

Description of Material to be Decontaminated

Based on **Table 1**, the interior of tanks A4409, SV28209, A3427, and A3641 are the only tanks included in this application for alternate decontamination and sampling, which are the only tanks that came in contact with liquid PBCs.

The frac tanks are of metal plate construction with the dimensions of approximately 45 feet long, 8.5 feet wide, and 11.1 feet high, with an approximate capacity of 21,000-gallons. Refer to **Figure 1** for an exterior view of the tank.

The interior of the tank contains a Carboline Phenoline 309 and 310 epoxy coating approximately 20-30 mils in thickness. Refer to **Figure 2** for an interior view of the tank.

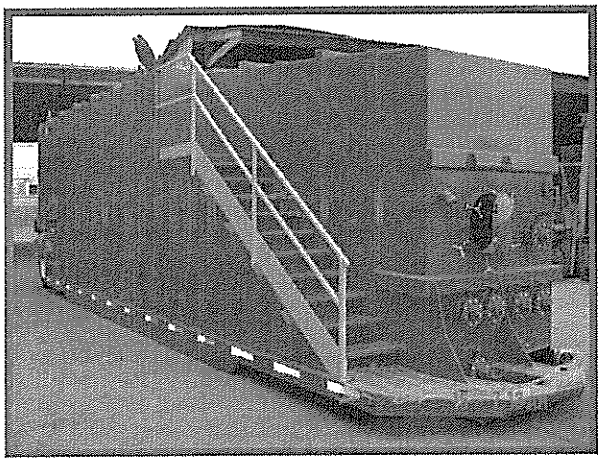

Figure 1. Frac Tank Exterior

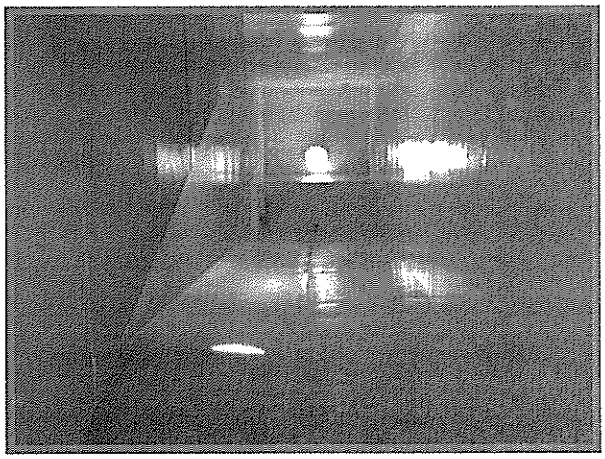

Figure 2. Frac Tank Interior

Demonstration / Validation Study to Confirm Performance with the Method

➢ Tank Selection

Based on **Table 1** (above) the highest known concentration of PCBs was contained in tank SV28209[5].

➢ Proposed Method for Tank Decontamination

On May 9, 2012 NRCES, directed by the USCG, conducted a decontamination demonstration / validation study on tank SV28209 using the proposed tank cleaning methodology described below. The solvent selected for PCBs remediation is Penetone Power Cleaner 155. A Material Safety Data Sheet (MSDS) for the Penetone Power Cleaner 155 (Penetone) is provided in **Attachment B**.

1. Apply Penetone using a Hudson type sprayer at a 50% Penetone / 50% water concentration on all walls and floors in a manner that covers the entire surface. Allow the Penetone stand for a minimum of 15 minutes.
2. Pressure wash the interior of the tank and collect all free liquids with transfer into 55 gallon drums.
3. With a clean and dry cotton rag, wipe all surfaces until no liquid is visible.
4. Starting on the lateral walls, spray the Penetone in a manner that covers the entire surface. Contain and collect any runoff for disposal.
5. Wipe the surface of the walls one square foot at a time with a Penetone-soaked rag. Each square-foot should be wiped for one minute before moving onto the next area in the tank.
6. Absorb the residual Penetone with a clean cotton rag until no visible traces of the liquid remain.
7. Spray the dried surface with Penetone for one minute until the area is very wet. Contain and collect any runoff for disposal.
8. Using a clean and dry cotton rag, wipe the residual Penetone off the surface, until no liquid is visible. Collect all rags for disposal.
9. Repeat step 2 through 6 on the same wall.
10. Repeat steps 1 through 7 on the next wall.
11. Repeat steps 1 through 7 on the floor of the tank.

[5] Note that tank A4409 has the potential for a PCB concentration greater than 12 mg/kg (as found in tank SV28209). However, due to matrix interferences, the sample required dilution thereby increasing the method detection limit to 20 mg/kg. This tank was not considered since no determination of the actual PCB concentration could be concluded.

Photographs of the cleaning operation are provided below.

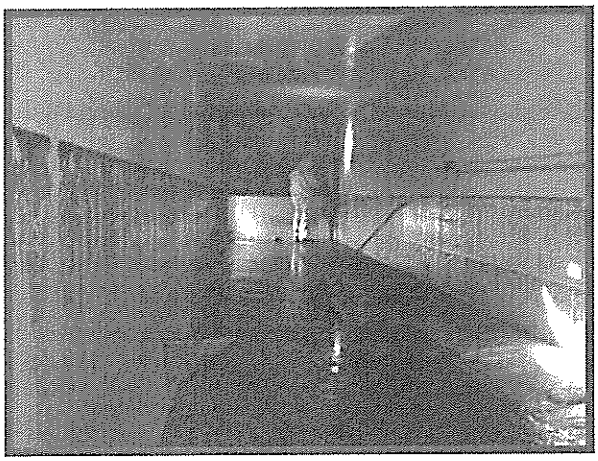

Figure 3. 1st Application of Penetone.

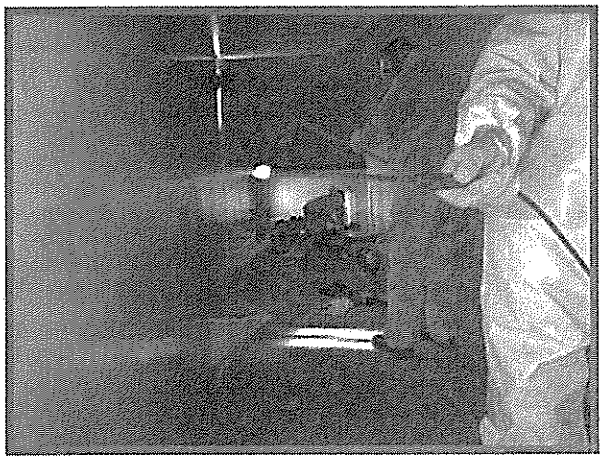

Figure 4. 3rd Application of Penetone and 2nd wipe down of surfaces.

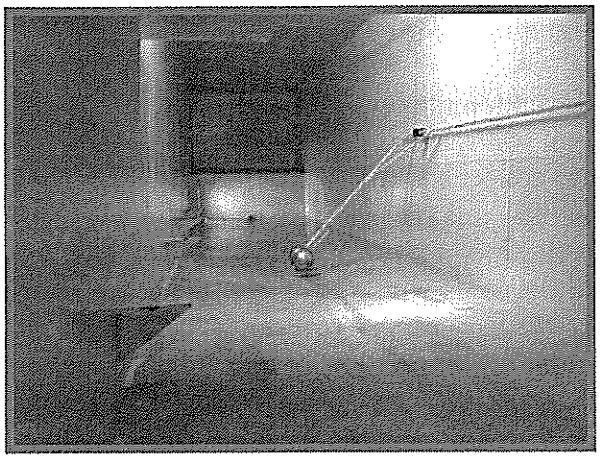

Figure 5. Frac Tank decontamination complete.

➢ Proposed Method for Tank Sampling

On May 10, 2012, sampling to verify cleanup of the frac tanks was performed by a third party, Otis Institute. For a detailed report on the sampling methodology and results please refer to **Attachment A**.

The **Table 2** (below), is a summary the analytical results from the frac tank sampling:

TABLE 2
SUMMARY OF ANALYTICAL RESULTS OF WIPE SAMPLING
(Each sample collected was 100 cm^2)

Sample ID	# of Wipe Samples	Results (in µg/sample)
Composite Sample #1	5	ND
Composite Sample #2	5	ND
Composite Sample #3	5	ND
Composite Sample #4	5	ND
Composite Sample #5	5	ND
Composite Sample #6	5	ND
Composite Sample #7	5	ND
Composite Sample #11	5	ND
Composite Sample #12	5	ND
Composite Sample #13	3	ND
Composite Sample #14	3	ND
Composite Sample #15 – Blank	5	ND
Composite Sample #16 – Blank	5	ND
Total Samples Taken		**51**
Total Composite Samples		**11**
99.99% Upper Confidence Limit		**1.61**
99.99% Upper Confidence Limit – Worst Case		**5.55**

All wipe sample composite analyses were "Non-detect". Non-detects may correspond to concentrations that are actually or virtually zero, or they may correspond to values that are considerably larger than zero but which are below the laboratory's ability to provide a reliable measurement.

These results have a 99.99 Upper Confidence Level of 5.55 µg/swipe (worst case scenario), this mean that any additional wipe sample would have a worse-case PCB concentration ≤ 5.55 µg/swipe (100 cm^2) almost half of the 10 µg/100 cm^2 limit. For more detailed information on the Upper Confidence Level evaluation refer to Section Six of **Attachment A**.

Photographs of the Frac Tank SV28209 wipe sample collection operation is provided below.

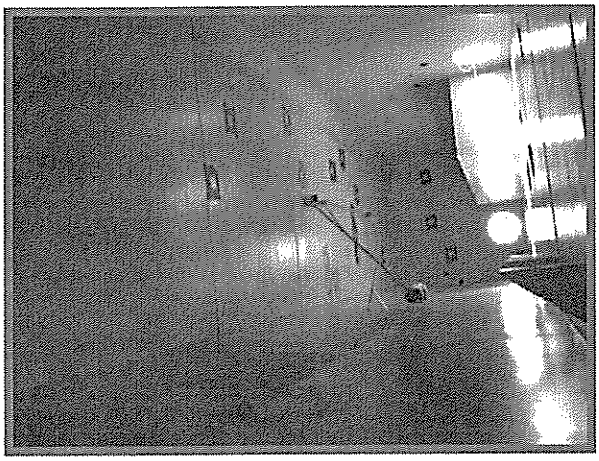

Figure 6. Lateral wall template placement for sample collection.

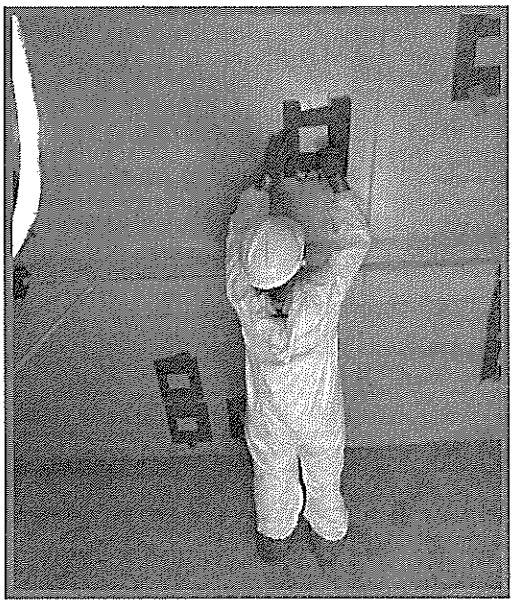

Figure 7. Otis Institute personnel performing wipe sample collection.

➢ **Pilot Test Conclusions**

The results of this pilot test show with a high level confidence that the proposed Alternative Decontamination and Sampling Plan is effective and exceeds the requirements of 40 CFR 761 Subpart P. It can be concluded that this is an appropriate method for decontaminating and collecting samples for the other three (3) frac tanks and verifying that the tanks meet the decontamination requirements in 40 CFR, 761.79(b)(3)(i)(A).

WASTE DISPOSAL

There are two types of waste streams that will be generated from the frac tank decontamination (oily water and de-con debris). These waste streams will be managed for disposal in the following manner:

- Oily water - originated from the collection of all liquids before and after the pressure wash of each of the frac tanks. This liquid waste will be characterized and disposed as Non-RCRA Hazardous Waste, Liquid (PCBs Remediation Oily Water "As Found" Less Than 49 mg/kg). This waste stream will be sent for final disposal at US Ecology Facilities in Beatty, Nevada or other appropriately permitted facility.

- Debris (Rags and PPE) – generated from the decontamination of the tanks with the Penetone. This solid waste will be characterized and disposed as Hazardous Waste (Tank Decontamination Debris). This waste stream will be sent to US Ecology Landfill Grandview, ID. The USCG has elected manage the waste in most conservative manner.

SUMMARY OF FINDINGS

NRCES has demonstrated that the methods outlined in this application meet and exceed the decontamination requirements outlined in 40 CFR 761.79 and request approval for the decontamination of the three (3) remaining frac tanks and to verify that the frac tanks meet the decontamination standard of ≤ 10 µg/100 cm^2 by the alternate sampling method developed by Otis Institute.

Thank you for your consideration in this matter. Should have any questions regarding this application, please contact me at your earliest convenience.

Sincerely,

Malcolm G. Maxwell
California Environmental Compliance Manager
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530.343.5488 (office)
mmaxwell@nrces.com

ATTACHMENT A

Alternative PCB Sampling Plan & Pilot Test Sample Results

USCG – Tiger Tug Boat Frac Tank

NRC Environmental Services Inc.
1605 Ferry Point
Alameda, CA 94501

Project Number: PRJ2012-0036
Revision: A

Date Prepared: May 25, 2012

Prepared by:

OTIS INSTITUTE

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Table of Contents

Section One

Summary

The Otis Institute was contracted by NRC Environmental Services, Inc., client the United States Coast Guard, to develop an "Alternative PCB Sampling Plan" (Plan) and perform and document PCB (polychlorinated biphenyl) confirmation sampling. This sampling represented a pilot test for one of the four 21,000 gallon tanks with an approximate surface area of 1,220 sq. ft. each (not including the ceiling). The purpose of this Plan is to supply an alternative sampling procedure and produce results with a 95% confidential level that meets and exceeds the requirements of 40 CFR 761.79 (b)(3)(i), while limiting the time and cost of material to perform the confirmation PCB wipe sampling.

The PCB wiping sampling took place on May 10, 2012 and was performed by HAZWOPER-trained Otis Institute personnel Rachel Yedlin, MPH and Laura Cremer, EIT with the assistance of Principal Consultant Israel King. The sampling event preceded a visual tank survey that was performed May 9, 2012, while the tank was being cleaned. The sampling event lasted 5 hours, 3 hours of which were spent inside the tank, a permit-confined space.

The sampling event was completed with no complications, however the original methodology was modified to gain better representative samples. The method was modified to exclude samples that were located on the ceiling of the tank and/or located higher than 7 feet from the floor of the tank. These sample locations proved to be unnecessary and irrelevant samples, for the tank ceiling did not come into contact with hazardous waste nor did the waste fill the tank higher than 2 feet from the ceiling.

Wipe Samples

The wipe samples were sent to Curtis and Tompkins Lab in Berkeley, California as composites. Each composite was analyzed with five analytes with varying reporting limits. These analytes and limits can be found in Attachment Three. All wipe sample composite analyses were "Non-detect". Non-detects may correspond to concentrations that are actually or virtually zero, or they may correspond to values that are considerably larger than zero but which are below the laboratory's ability to provide a reliable measurement. The results have been evaluated with calculations of the upper confidence level. Refer to Section Six for this evaluation.

Conclusions

All samples for PCB contaminants were below the reportable limits or concentrations and were identified as "Non Detect". Based on these results and the evaluations of the upper confidence level presented in this report in Section Five, the Otis Institute has declared this Alternative Sampling Plan meet the EPA's requirements outlined in 40 CFR 761.79 (b)(3)(i).

The Otis Institute is confident that the presented Alternative Sampling Plan and Pilot Test Sampling exceeds the requirements of 40 CFR 761.79 (b)(3)(i) and is an appropriate method for collecting samples for the other existing tanks and verifying that the tanks are considered meeting the decontamination requirements.

Based on the cleaning methodology, the modified alternative sampling plan and the Pilot Test sampling results, we request approval that this tank is considered properly decontaminated and that if the other tanks meet the same 99.99% UCL of less than 8 µg/that these tanks will also be considered decontaminated per the EPA.

Section Two

Background

This Alternative Sampling Plan is designed to direct the proposed surface sampling activities for the Baker Frac Tank that was cleaned on May 9th, 2012. The tank had previously contained water with oil and Polychlorinated biphenyl (PCB) contamination. This Plan was developed to document PCB confirmation sampling for NRC Environmental Services Inc. client the United States Coast Guard and represents a pilot test for one of the four existing 21,000 gallon tanks with an approximate surface area of 1,220 sq. ft. each (not including the ceiling).

This plan describes the proposed sampling methods and locations within the interior of the tank that confirmation sampling will take place. The sampling plan is limited to the methods proposed for verification sampling of cleaned frac tank interior surfaces that may be affected as a result of contact with PCBs associated with the wastewater from the tug boat "Tiger".

Potential environmental (i.e., soil and/or ground water) impacts associated with the property on which the frac tank is physically located are outside the scope of this sampling plan.

Limitations

This sampling plan has been prepared by Otis Institute consultants who have sampling plan development and industrial hygiene experience and are knowledgeable about industrial processes, including the types of hazardous materials used in these processes that may affect facility utilities, equipment, and surfaces. This sampling plan has been prepared based on information provided by NRC Environmental, and observations of conditions of the Baker frac tank during our May 9th site visit. The verification that the tank is clean and exceeds EPA requirements can only be demonstrated by the Pilot PCB Wipe Sampling to verify the adequacy of the decontamination activities will support the reduced sample size and composting of samples. This sampling plan assumes the epoxy test will document that the surface is non-porous.

No warranty, expressed or implied, is made. In the event that changes in the nature, use, or layout of the tanks or property are made or discovered, the information contained in this sampling plan may not be valid and changes may be warranted. Industrial hygienists that complete this sampling plan should use professional judgment in the field during sampling activities.

Strategy

An "Alternative PCB Sampling Plan" was developed to provide PCB confirmation sampling for NRC Environmental Services Inc. client the United States Coast Guard. This was a pilot test for one of the five 21,000 gallon tanks with an approximate surface area of 1690 sq. ft. The basic strategy is to perform the alternative sampling pilot test documented within and with receipt of the wipe sample results from Curtis & Tompkins that the alternative plan and the received results will meet and exceed the requirements of 40 CFR 761.79 (b)(3)(i). The plan has three objectives:

1. Reduce the number of wipes samples that are required to be collected for all four tanks.
2. Reduce the cost of sample analysis by compositing PCB wipe samples
3. Verify based on sample test results that the reduced number of wipes and composting will meet and/or exceed the requirements of 40 CFR 761.79 (b)(3)(i)

Based on the review of the draft "Tug Tiger Alternative Decontamination & Sampling Plan" document we expect that the maximum test result will be less than 5 µg/100 cm2 and the mean average will be less than 2 µg/100 cm2.

> *40 CFR 761.79 (b)(3)(i).For non-porous surfaces previously in contact with liquid PCBs at any concentration, where no free-flowing liquids are currently present, ≤10 micrograms PCBs per 100 square centimeters (≤10 µg/100 cm2) as measured by a standard wipe test (761.123) at locations selected in accordance with subpart P of this part.*

The EPA approved methodology requires a minimum of 1 sample per 1 square meter area. The sampling methodology described will be modified to include "Compositing Strategy for Analysis of Samples" and/or reduce the number of samples by reduction in the acceptable limits (≤10 µg/100 cm2) such that a reduced number of total samples can be taken but demonstrate that the tanks have been properly decontaminated. The wipe sample confirmation sampling is assumes that the Alternative PCB sampling plan will confirm the reduction in the total samples to 60 per tank and that 5 individual samples will be composted for 12 filed composite samples. 6 samples will be taken on opening including valves and manways and composited into 2 samples. Two blank composite samples will also be analyzed. All composite wipe samples will be analyzed by Curtis and Tompkins Laboratories located in Berkeley, CA. PCB sampling and analysis will be completed per EPA's SW-846, Test Methods for Evaluating Solid Waste requirements. Troy Christensen, PE, Managing Principal of Otis Institute will be project manager and lead technical expert for this project.

The environmental sampling strategy is designed to effectively assess PCB contamination levels on tank interior surfaces following decontamination efforts. Representative sampling of tank interior surfaces will be performed to determine existing PCB levels after decontamination activities and verify that decontamination was adequate to meet EPA regulatory requirements of 40 CFR 761.

Details on the environmental sampling procedures and laboratory analysis are summarized below:

- Wipe samples for PCB will be taken on each wall of the tank and the sample locations was determined by an excel random number generator to verify that PCB levels on tanks surfaces are below regulatory limits and the tank can be released for other uses.

Section Three

Protocol

The sampling strategy that follows is designed to assess contamination levels on tank interior surfaces while controlling analytical costs. Slightly different approaches were used for openings compared to flat surfaces. The alternative sampling strategy includes a reduction in the number of samples using a random sample location from 157 wipe samples (1 per square meter) to 52 wipe samples and increasing the number of sample allowed to be composited from 3 to 5 for flat surfaces. This alternative sampling and composite testing plan reduces the analytical tests from 54 to 11 + 2 blanks (16 total). The following are the Federal EPA requirements for reference:

40 CFR § 761.310

Collecting the sample.

Use the standard wipe test as defined in § 761.123 to sample one 10 centimeter by 10 centimeter square (100 cm 2) area to represent surface area PCB concentrations of each square meter or fraction of a square meter of a nearly flat, non-porous surface. For small surfaces, use the same procedure as for the standard wipe test, only sample the entire area, rather than 10 centimeter by 10 centimeter squares.

40 CFR § 761.312

Compositing of samples.

For a surface originally contaminated by a single source of PCBs with a uniform concentration, it is permissible to composite surface wipe test samples and to use the composite measurement to represent the PCB concentration of the entire surface. Composite samples consist of more than one sample gauze extracted and chemically analyzed together resulting in a single measurement. The composite measurement represents an arithmetic mean of the composited samples.

(a) Compositing samples from surfaces to be used or reused. For small or irregularly shaped surfaces or large nearly flat surfaces, if the surfaces are contaminated by a single source of PCBs with a uniform concentration, composite a maximum of three adjacent samples.

(b) Compositing samples from surfaces to be disposed of off-site or on-site.

N/A

(1) For small or irregularly shaped surfaces, composite a maximum of three adjacent samples.

(2) For large nearly flat surfaces, composite a maximum of 10 adjacent samples.

40 CFR § 761.123

Standard wipe test.

Standard wipe test means, for spills of high-concentration PCBs on solid surfaces, a cleanup to numerical surface standards and sampling by a standard wipe test to verify that the numerical standards have been met. This definition constitutes the minimum requirements for an appropriate wipe testing protocol. A standard-size template (10 centimeters (cm) × 10 cm) will be used to delineate the area of cleanup; the wiping medium will be a gauze pad or glass wool of known size which has been saturated with hexane. It is important that the wipe be performed very quickly after the hexane is exposed to air. EPA strongly recommends that the gauze (or glass wool) be prepared with hexane in the laboratory and that the wiping medium be stored in sealed glass vials until it is used for the wipe test. Further, EPA requires the collection and testing of field blanks and replicates.

Types and Number of Samples

The types of wipe samples taken and the location of wipe samples is document in Attachment Two as Log Sheets and a copy of the Baker Tank general dimensions and opening locations is provided as Attachment One. Two Log Sheets are provided in Attachment Two: (1) Original Purposed Log Sheet, demonstrating the modifications mentioned, and (2) Actual Log Sheet, identifying the actual sampling location coordinates and corresponding lab results. A Wall – Opening Description is also provided in Attachment Two.

Table 1: Sampling – Composite Guidance

Surface Configuration	Maximum No. of Samples Composited	Qualifier
Valves, manways and other opening in the tank	3	Sampling personnel will use the template to estimate the surface are to be sampled.
Flat surfaces – top, bottom, sides and ends	5	Samples are taken based on the random generated X, Y coordinates for the interior wall surface provided as Attachment Two. The log sheet grouped samples into composite samples.

Section Four

Sampling Procedure

This section describes the actual field procedure that was used collecting representative samples of potentially affected surfaces. Upon approval, this procedure should be used for future sample collection.

Personnel conducting sampling should don appropriate PPE. Gloves should be worn and changed as appropriate to avoid cross-contamination of samples. A minimum of two pair of nitrile gloves must be worn at all times. The outer pair will be replaced after every wipe sample. Inner glove will be replaced if outer glove is damaged for any reasons. Only approved supplies will enter the tank:

- Duct tape
- Templates
- Otis paperwork with sample locations
- Tape measure
- Plastic bags
- Gloves
- Sharpie
- Wipe sampling equipment including glass jars, wipes and hexane bottle.

Once inside, personnel will use a plastic bag to set down their equipment. Everything that entered the tank must be decontaminated after the sampling session. Used templates will be assumed to be PCB contaminated and must be properly disposed.

Templates

The PCB wipe samples will use a Template Assisted Sampling Procedure. Wipe Sample Templates with an opening of (10 centimeters (cm) × 10 cm) will be taped in the X, Y location as documented in the Log Sheet.

If the sample location described in the Log Sheet is outside of the wall configuration the template will be placed at a location that is closest to the grid location within the interior of the tank. A comment will be added to the log sheet to document the new sample location. A copy of the Log Sheet and Wall – Opening Description is provided as Attachment Two. For samples that are out of reach and that did not represent a PCB contaminated sample (higher than 7 feet or 2 feet from the top of the tank ceiling, whichever distance is more out of reach for the sampler), sampling personnel will pick a random height and note this on the log sheet. The same strategy will be applied to valves and manholes that are out of reach.

> Note: This occurred during the first sampling event which led to the modification of this protocol. To gain better representative samples, the method was modified to exclude samples that were located on the ceiling of the tank and/or located higher than 7 feet from the floor of the tank. These sample locations proved to be unnecessary and irrelevant samples, for the tank ceiling did not come into contact with hazardous waste nor did the waste fill the tank higher than 2 feet from the ceiling. This modification will be observed for future sampling collection activities pertaining to this project if similar conditions exist in the other tanks to be sampled.

For sampling of valves or manholes or other irregular objects, a template should be held up to estimate the surface area that needs to be wiped. When taping templates, personnel will not place gloves in the center opening where sampling takes place.

Templates will not be re-used for any reason. Used templates must be properly disposed of and assumed to be PCB contaminated.

Wipe Sampling Method

Curtis Tompkins will provide wipes, hexane squeeze bottle, extra hexane bottle, and composite sample collection bottles. Each wipe will be submitted to and analyzed by the Curtis Tompkins using EPA Method SW846 for PCBs, which is a California/Federal EPA certified lab. The following is the wipe sampling Template Assisted Sampling Procedure that was followed for all samples:

1. Carefully place and tape a clean template on the sampling surface in a manner that minimizes disruption, if not already in place. All templates were adhered to the wall before sampling began.
2. Pull on a pair of clean, powderless, nitrile gloves.
3. Remove wipe from package and saturate wipe with the hexane squeeze bottle.
4. First Wiping, Side-to-Side: Hold one edge of the wipe between the thumb and forefinger, draping the wipe over the fingers of a gloved hand. Hold fingers together, hand flat, and wipe the selected surface area, starting at either corner furthest away from the operator (referred to as a far corner), using a slow side to side (left-to-right or right-to-left) sweeping motion. During wiping, apply pressure to the finger tips.
5. At the end of the first pass from one side to the other, turn the leading edge of the wipe (the portion of the wipe touching the surface) 180 degrees, pulling the wipe path slightly closer to the operator and make a second side-to-side pass in the reverse direction, slightly overlapping the first pass (The 180 degree turn is used to assure that the wiping motion is always performed in the same direction on the wipe to maximize coverage in the template). Continue to cover the sampling area within the template, using the slightly overlapping side-to-side passes with the 180 degree turns at each edge until the close corner of the template is reached. Carefully lift the leading line into the wipe using a slight rolling motion of the hand to capture any contaminates inside the wipe. Fold the wipe in half with the sample side folded inside the fold.
6. Second Wiping, Top-to-Bottom: Using a clean side of the wipe, perform a second wiping over the sampling area within the template starting from a far corner in the same manner used for the first wiping, except use a top-to-bottom sweeping of the surface. When the close corner of the template is reached, carefully lift the leading line into the wipe using a slight rolling motion of the hand to capture the contaminate inside the wipe. Fold the wipe in half (again) with the sample from this second wiping folded inside the fold.
7. Insert the folded wipe into a sample collection container. Place sample in the appropriate composite container per the log sheet. Properly dispose of gloves. Fill out log sheet with time and any comment/location changes.
8. Do not reuse a template; templates will be disposed of in bag along with the third layer of gloves.

Sample Control

Each sample container will be labeled with the following information at the time of sampling:

- Baker Tank
- Composite Sample Number
- Sample ID # Range (examples: 1-5, 6-10, 11-15)
- PCB Composite Wipe Sample
- Date of sample
- Name of sampler

Each sampling event will be recorded on a datasheet. If the sampler believes it to be helpful, a photograph will be taken of the sampling area. All samples sent to Curtis Tompkins for sampling testing will be provided with a change of custody form.

Laboratory Analysis

PCB composite wipe samples will be sent to Curtis Tompkins in Berkeley for laboratory analysis. Results of these samples will be analysis to verify confidence level that meets and/or exceeds regulatory requirements statistically.

Section Five

Pilot Test Sampling Event

The first sampling event was completed with no complications. Otis Institute personnel arrived onsite and immediately held a safety meeting. After donning all the personnel protective equipment, NRC employees reviewed and performed a permit-required confined space entry procedure. The two samplers entered the tank and measured sampling points on sides A and D and applied the templates. It was decided that laying out all the templates would be faster to do at once, so when it was time to wipe, they didn't need to worry about the evaporation of hexane. The same procedure was followed for sides C, B, F, and for the non-flat surfaces located throughout the tank. The most tedious part of the sampling event was duct-taping every template to the wall. In the future, it would be faster and easier if the templates already had a sticky surface applied.

Upon arrival at the sample collect site with NRC personnel, the Otis Institute was informed that the tank ceiling did not come into contact with hazardous waste nor did the waste fill the tank higher than 2 feet from the ceiling. This fact immediately led to the modification of this protocol. To gain better representative samples, the method was modified to exclude samples that were located on the ceiling of the tank and/or located higher than 7 feet from the floor of the tank. These sample locations proved to be unnecessary and irrelevant samples.

The collectors used to the described procedure. Template Assisted Sampling Procedure each sample on the flat surface of the Baker Tank. Wipe Sample Templates with an opening of (10 centimeters (cm) × 10 cm) were taped in the X, Y location as documented in the Log Sheet. For samples that were out of reach and that did not represent a PCB contaminated sample (higher than 7 feet or 2 feet from the top of the tank ceiling, whichever distance is more out of reach for the sampler), sampling personnel selected a random height and noted this on the log sheet. These changes are shown on the Original Log Sheet in Attachment Two. Additionally, because some valves and manholes were located on the ceiling or located 2 feet from the ceiling only the 6 of the 12 were sampled to gain a more representative sample.

Results

All wipe sample composite analyses were "Non-detect". Non-detects may correspond to concentrations that are actually or virtually zero, or they may correspond to values that are considerably larger than zero but which are below the laboratory's ability to provide a reliable measurement. The results have been evaluated with calculations of the upper confidence level. Refer to Section Six for this evaluation. Attachment Two contains the Log Sheets that show the actual measured sample points with corresponding results and Attachment Three contains the Chain of Custody and Lab report.

Recommendations for Additional Sampling

1. Use of duct tape is very difficult and time consuming. Prepared templates should have a sticky side ahead of time.

Section Six

Upper Confidence Level Evaluations

The data was evaluated to determine the upper confidence level of the Pilot Sampling. The sample data obtained from the composite PCB wipe samples test was normally distributed, the one-sided (1-α) upper confidence limit $UCL_{1-\alpha}$ on the mean was computed using the Student's t-statistic. An example of the computation can be found in the EPA's guide book referenced below. The tables below show these computations in two separate ways.

It was previously determined that only PBC components Aroclor 1016 and Aroclor 1260 exist in the original wastewater-oil mixture (Torrent, 2012). Based on only two types of PCB components was found in the initial only these two Reporting Limits (RL) were used to compute the UCL the results, which each have a limit of 2.5 µg/sample (Total 5 µg per sample). Table 2 documents computation of the UCL using the assumed PCB concentration that is based on the sum of the reporting limits divided by number of samples in composite. Table 3, however, presents a worst-case-scenario, because it does not take into account the wipe samples being composited.

The Pilot Test sampling data documents with a 99.99% UCL that any additional wipe samples would have a worse-case PCB concentration ≤5.55 µg/swipe. This exceeds the requirements of the of 40 CFR 761.79 (b)(3)(i), which states that, for non-porous surfaces previously in contact with liquid PCBs at any concentration, must be ≤10 micrograms PCBs per 100 square centimeters (≤10 µg/100 cm2) as measured by a standard wipe test. More accurately, with the presence of known Aroclors accounted for, there is a 99.99% chance that the concentration of PCB 1.61 µg/swipe by statistics since there is 5 wipes composited.

$$UCL = \frac{\Sigma \text{Reporting Limits (circle ND)}}{\#\ \text{Composite Samples}}$$

is below (confusing writing

Table 2: Reporting Limit of Potential Aroclors Divided by Number of Samples in Composite

Sample ID	# of Wipe Samples	Results	Analysis Reporting Limit Summed for the 2 Expected PCB 1016 & 1260 Analytical (µg/sample)	Summed RL / # of Wipes in Composite Sample	Random # Generator Between 0-100%	Assumed PCB level Based on Random Percent Generator (µg/wipe)
Composite Sample #1	5	ND	5	1	73%	0.73
Composite Sample #2	5	ND	5	1	93%	0.93
Composite Sample #3	5	ND	5	1	12%	0.12
Composite Sample #4	5	ND	5	1	32%	0.32
Composite Sample #5	5	ND	5	1	21%	0.21
Composite Sample #6	5	ND	5	1	66%	0.66
Composite Sample #7	5	ND	5	1	83%	0.83
Composite Sample #11	5	ND	5	1	36%	0.36
Composite Sample #12	5	ND	5	1	85%	0.85
Composite Sample #13	3	ND	5	1.7	92%	1.53
Composite Sample #14	3	ND	5	1.7	88%	1.47
Composite Sample #15 - Blank	5	ND	5	1	NA	NA
Composite Sample #16 - Blank	5	ND	5	1	NA	NA
Total Samples Taken						**51**
Total Composite Samples						**11**
Average Concentration						**0.73**
Standard Deviation						**0.47**
Alpha 99.99% Confidence						**0.0001**
Alpha 99.9% Confidence						**0.001**
Alpha 99% Confidence						**0.01**
Alpha 95% Confidence						**0.05**
Confidence Interval 99.99%						**0.88**
Confidence Interval 99.9%						**0.65**
Confidence Interval 99%						**0.45**
Confidence Interval 95%						**0.32**
99.99% Upper Confidence Limit						**1.61**
99.9% Upper Confidence Limit						**1.38**
99% Upper Confidence Limit						**1.18**
95% Upper Confidence Limit						**0.23**

Table 3: Worse-Case Scenario – Not Dividing Reporting Limit by # of Samples

			RL not Divided by Number of Samples in Composite		
Sample ID	# of Wipe Samples	Results	Analysis Reporting Limit Summed for the 2 Expected PCB 1016 & 1260 Analytical* (µg/sample)	Random # Generator Between 0-100%	Assumed PCB level Based on Random Percent Generator (µg/sample)
Composite Sample #1	5	ND	5	77%	3.85
Composite Sample #2	5	ND	5	97%	4.85
Composite Sample #3	5	ND	5	66%	3.30
Composite Sample #4	5	ND	5	91%	4.55
Composite Sample #5	5	ND	5	77%	3.85
Composite Sample #6	5	ND	5	42%	2.10
Composite Sample #7	5	ND	5	10%	0.50
Composite Sample #11	5	ND	5	24%	1.20
Composite Sample #12	5	ND	5	49%	2.45
Composite Sample #13	3	ND	3	94%	2.82
Composite Sample #14	3	ND	3	25%	0.75
Composite Sample #15 - Blank	5	ND	5		
Composite Sample #16 - Blank	5	ND	5		
Total Samples Taken					**51**
Total Composite Samples					**11**
Average Concentration					**2.75**
Standard Deviation					**1.50**
Alpha 99.99% Confidence					**0.0001**
Alpha 99.9% Confidence					**0.001**
Alpha 99% Confidence					**0.01**
Alpha 95% Confidence					**0.05**
Confidence Interval 99.99%					**2.80**
Confidence Interval 99.9%					**2.07**
Confidence Interval 99%					**1.43**
Confidence Interval 95%					**1.00**
99.99% Upper Confidence Limit					**5.55**
99.9% Upper Confidence Limit					**4.82**
99% Upper Confidence Limit					**4.18**
95% Upper Confidence Limit					**2.76**

Section Seven

Conclusion

The Otis Institute is confident that the presented Alternative Sampling Plan and Pilot Test Sampling exceeds the requirements of 40 CFR 761.79 (b)(3)(i) and is an appropriate method for collecting samples for the other existing tanks and verifying that the tanks are considered meeting the decontamination requirements.

Based on the cleaning methodology, the modified alternative sampling plan and the Pilot Test sampling results, we request approval that this tank is considered properly decontaminated and that if the other tanks meet the same 99.99% UCL of less than 8 µg/that these tanks will also be considered decontaminated per the EPA.

References

- EPA (2002) *CALCULATING UPPER CONFIDENCE LIMITS FOR EXPOSURE POINT CONCENTRATIONS AT HAZARDOUS WASTE SITES.* Office of Emergency and Remedial Response U.S. Environmental Protection Agency Washington, D.C. 20460
- Torrent Laboratories Analytical Report, Torrent Laboratories – Environmental Division. 483 Sinclair Frontage Rd, Milpitas, CA 95035. February 14 2012

Attachment One

Baker Tank Figures

PRODUCT DATA SHEET
January, 2007

ESPM FIXED AXLE TANK
(SMOOTH-WALL LODI VERSION)

GENERAL INFORMATION

This tank has a smooth interior wall for easy cleaning.

WEIGHTS AND MEASURES

» Capacity:	467 BBL (19,612 gals.) – Straight stairway, or 474 BBL (19908 gals.) – Crossing stairway
» Height:	10'-3½" (overall) 9'-2" (tank only)
» Width :	8'-0" (overall) 7'-5½" (inside width)
» Length:	46'-0" (overall) 42'-7" (tank only)
» Weight:	29,500 lbs. ±

STRUCTURAL DESIGN

» Floor:	¼" thick ASTM A36 carbon steel
» Sides/Ends:	¼" thick ASTM A36 carbon steel
» Roof Deck:	¼" thick ASTM A36 carbon steel
» Wall Frame:	6"x3"x¼" ASTM A36 formed channel on 27" centers (on exterior side of walls)
» Roof Framing:	¼" ASTM A36 formed channels on 24" centers

FEATURES

» Valves:	(2)Front & (1)Rear: wafer butterfly valve. Cast iron body, Buna-N seat & seals, 316 SS stem, Nylon 11 coated ductile iron disk, with plug and chain.
» Relief Valve:	16 oz./in^2 pressure setting, 0.4 oz./in^2 vacuum setting; Buna-N seal
» Rear Drain:	4"-150# FNPT flange
» Front Drain:	4"-150# FNPT flange

FEATURES – cont.

» Top Manway:	22' I.D. min. - ½" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
» Front Manway:	22' I.D. min. - 1/2" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
» Side Manway:	22' I.D. min. - 1/2" flat steel with slotted hinges w/ Buna-N seal (thermally fused to tank)
» Stairway:	Non-slip w/handrails & guardrails; OSHA compliant
» Top Fill Conn:	3" sch. 40 pipe with cap & chain
» Level Gauge:	Ball float style; 2-8" SS floats
» Tires:	11.00 x 22.5 Nylon tubeless
» Axles:	Standard 22,500#, automatic slack adjusters, cast drum and hub, 30 service chambers, outboard drums (Rockwell 5" O.D. x ½" wall x 71.5" track w/ oil seals)
» Suspension:	Reyco 3-spring 22,500 lb. Capacity
» Brakes:	Air brake system

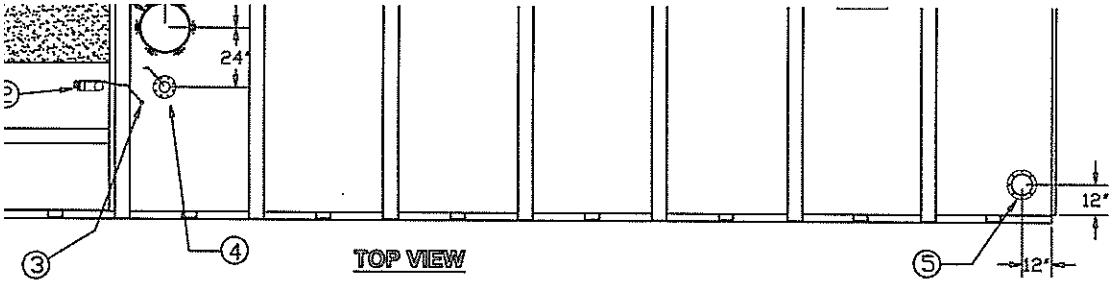
SURFACE DETAILS

» Exterior Coating:	High Gloss Polyurethane
» Interior Coating:	Chemical resistant lining
» Safety Paint:	Safety yellow on handrails, hatch covers and trip hazard surfaces

TESTS/CERTIFICATIONS

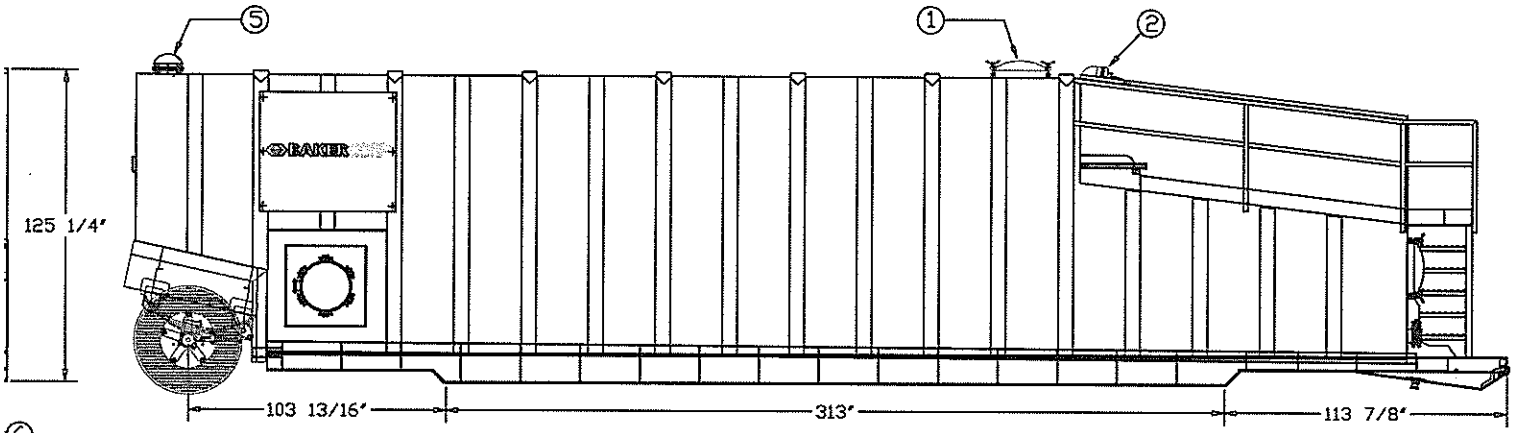
» Test Performed:	Hydrostatic water test after construction and major repairs; Level I, II and III inspections on a scheduled basis

BAKERCORP

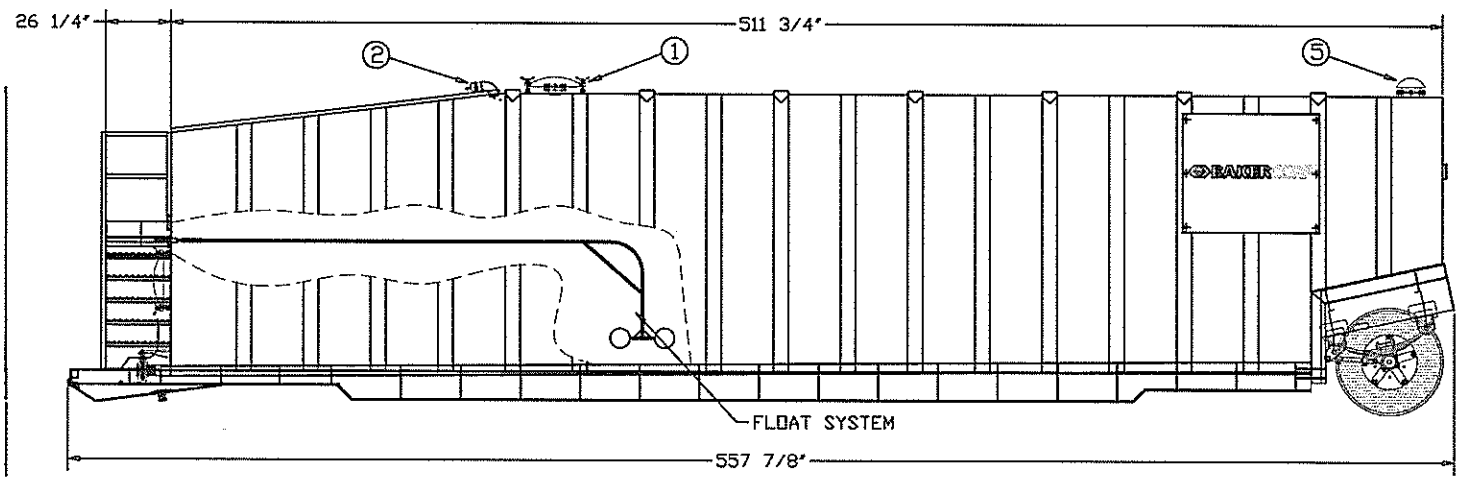


TOP VIEW

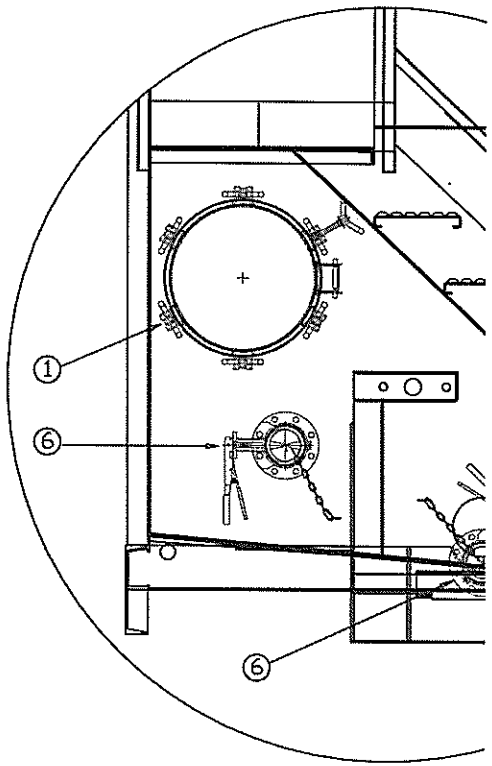
4	1	4"
5	1	8"
6	3	4"



PASSENGER VIEW



DRIVER VIEW



FRONT VIEW CL

BL)

BAKER

G				SCALE: DO NOT SCALE
F				

Attachment Two

- **Modified Log Sheet with Results**
- **Original Log sheet with listed Modifications**
- **Wall – Opening Description**

This logsheet shows the actual measured sample locations and the results from Curtis and Tompkins Lab.
This logsheet does not show which points and/or sides were skipped

Grid Location and Start Point		Grid Sample #	X, Y Location on Grid Sorted	Sample ID #	Composite Sample #	Comments - Notes	Analyte	Result
Side A Driver Side	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank	1	0.33, 4.5	1	1		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		2	20, 4	2				
		3	21, 6	3				
		4	26, 7	4				
		5	27, 5	5		New measurement noted		
		6	29, 1	6	2		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		7	29, 2	7				
		8	30, 1	8		New measurement noted		
		9	32, 6	9				
		10	34, 9	10				
		11	35, 2	11	3		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		12	35, 3	12				
		13	36, 5	13				
		14	40, 2	14				
		15	34, 4	15		New measurement noted		
Side D - Front View	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank	1	3, 4	16	4		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		2	3, 7	17				
		3	4, 2	18				
Side C - Passenger View	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank	1	3, 1	19				
		2	3, 5	20				
		3	11, 5	21	5	New measurement noted	Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		4	11, 2	22		New measurement noted		
		5	12, 0	23				
		6	13, 4	24				
		7	13, 6	25				
		8	17, 4	26	6		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		9	19, 7	27				
Side C - Passenger View	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank	10	21, 0	28				
		11	27, 7	29		New measurement noted		
		12	30, 4	30				
		13	31, 5	31	7		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		14	37, 6	32		New measurement noted		
		15	5, 4	33				
Side B - Rear View	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank	1	4, 3	34				
		2	6, 5	35				
Side F - Bottom View	X=0 & Y=0 @ Bottom Left Hand Corner From Inside Tank at Intersection of Side B and C	3	6, 5	37	11		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		4	11, 4	38				
		5	13, 5	39				
		6	21, 2	40				
ttom View	ttom Left Hand Inside Tank at f Side B and C	7	27, 2	41				
		8	29, 6	42				
		9	30, 2	43				

Grid Location and Start Point		Grid Sample #	X, Y Location on Grid Sorted	Sample ID #	Composite Sample #	Comments - Notes	Analyte	Result
Side F - Bo	X=0 & Y=0 @ Bo Corner From Intersection o	10	32, 4	44	12		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		11	33, 4	45		New measurement noted		
		12	35, 1	46		New measurement noted		
Valves - Manway To Be Sampled	See Opening Section for Valve Location By Opening #	1	1	61	13	Side B - Rear View - Valve Center Bottom	Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		2	2	62		Side C - Passenger View - Manway Left Side Bottom		
		3	7	63		Side E - Top View - Unknown Valve in far left Corner		
		4	8	64	14	Side D - Front View - Manway	Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1261	ND
		5	11	65		Side D - Front View - Valve in bottom center of Tank		
		6	12	66		Side D - Front View - Valve to right of bottom center valve		
Blank Composite	10 Wipes with Hexane Applied and Composited	1	Blank	53	15		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		2	Blank	54				
		3	Blank	55				
		4	Blank	56				
		5	Blank	57				
		6	Blank	58	16		Aroclor-1016, 1221, 1232, 1242, 1248, 1254, 1260	ND
		7	Blank	59				
		8	Blank	60				
		9	Blank	61				
		10	Blank	62				

This logsheet shows the sample point locations that were determined prior to the sampling event. The changes made during the sampling event are noted in the comments. This logsheet also shows which sides and/or points were skipped

Grid Location and Start Point		Grid Sample #	X, Y Location on Grid Sected	Sample ID #	Composite Sample #	Comments - Notes
Side A-Driver Side	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank	1	0, 1	1	1	(0', 1"= Height of wheel)
		2	20, 4	2		
		3	21, 6	3		
		4	26, 7	4		
		5	27, 10	5		Actually measured 27, 9
		6	29, 1	6	2	
		7	29, 7	7		
		8	31, 1	8		Actually measured 30, 1
		9	32, 6	9		
		10	34, 9	10		
		11	35, 2	11	3	
		12	35, 3	12		
		13	36, 5	13		
		14	40, 2	14		
		15	34, 9	15		Actually measured 34, 4
Side D - Front View	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank	1	2, 4	16	4	
		2	2, 7	17		
		3	4, 2	18		
Side C - Passenger View	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank	1	2, 1	19		
		2	2, 5	20		
		3	11, 10	21	5	Actually measured 11, 9
		4	11, 9	22		Actually measured 11, 2
		5	12, 0	23		
		6	13, 4	24		
		7	13, 6	25		
		8	17, 4	26	6	
		9	19, 7	27		
Side C - Passenger View	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank	10	21, 0	28	6	
		11	27, 8	29		Actually measured 27, 7
		12	30, 4	30		
		13	31, 5	31	7	
		14	37, 9	32		Actually measured 37, 6
		15	5, 4	33		
Side B - Rear View	1-0 & 7-0 @ Bottom Left Hand Corner From Inside Tank	1	4, 3	34		
		2	6, 5	35		
		3	7, 9	36	8	Removed from sample collection because the ceiling was never in contact with hazardous waste and therefore would not respresent a PCB contaminated sample
Side E - Top View	1-0 & 1-0 @ Bottom Left Hand Corner from Inside Tank at Intersection of Side D and C	1	1, 2			
		2	1, 7			
		3	7, 3			
		4	11, 1			
		5	14, 6		9	
		6	16, 5			
		7	17, 3			
		8	22, 2			
		9	31, 3			
		10	31, 5		10	
		11	39, 7			
		12	42, 0			
Side F - Bottom View	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank at Intersection of Side B and C	1	0, 1			
		2	3, 5			
		3	6, 5	37	11	
		4	11, 4	38		
		5	13, 5	39		
		6	21, 2	40		
		7	27, 2	41		
Side F - Bottom View	1-0 & 7-0 @ Bottom Left Hand Corner from Inside Tank at Intersection of Side B and C	8	29, 6	42	12	
		9	30, 2	43		
		10	32, 4	44		
		11	38, 6	45		Actually measured to 33, 4
		12	39, 1	46		Actually measured to 39, 1
Valves - Manway To Be Sampled	See Opening Section for Valve Location by Opening #	1	2	47	13	Side C - Passenger View - Manway Left Side Bottom
		2	4	48		Side E - Top View - Valve behind Manway
		3	5	49		Side E - Top View - Next Valve to Right
		4	6	50	14	Side E - Top View - Next Valve to Right
		5	8	51		Side D - Front View - Manway
		6	12	52		Side D - Front View - Valve to right of bottom center valve
Tank Composite	Same Applied and Composited	1	Blank	53	15	
		2	Blank	54		
		3	Blank	55		
		4	Blank	56		
		5	Blank	57		
		6	Blank	58		

Removed from sample collection because the ceiling was never in contact with hazardous waste and therefore would not respresent a PCB contaminated sample. These were samples instead --->

Valves - Manway To Be Sampled	See Opening Section for Valve Location by Opening #					
		1	1	61	13	Side B - Rear View - Valve Center Bottom
		2	2	62		Side C - Passenger View - Manway Left Side Bottom
		3	7	63		Side E - Top View - Unknown Valve in far left Corner
		4	8	64	14	Side D - Front View - Manway
		5	11	65		Side D - Front View - Valve in bottom center of Tank
		6	12	66		Side D - Front View - Valve to right of bottom center valve

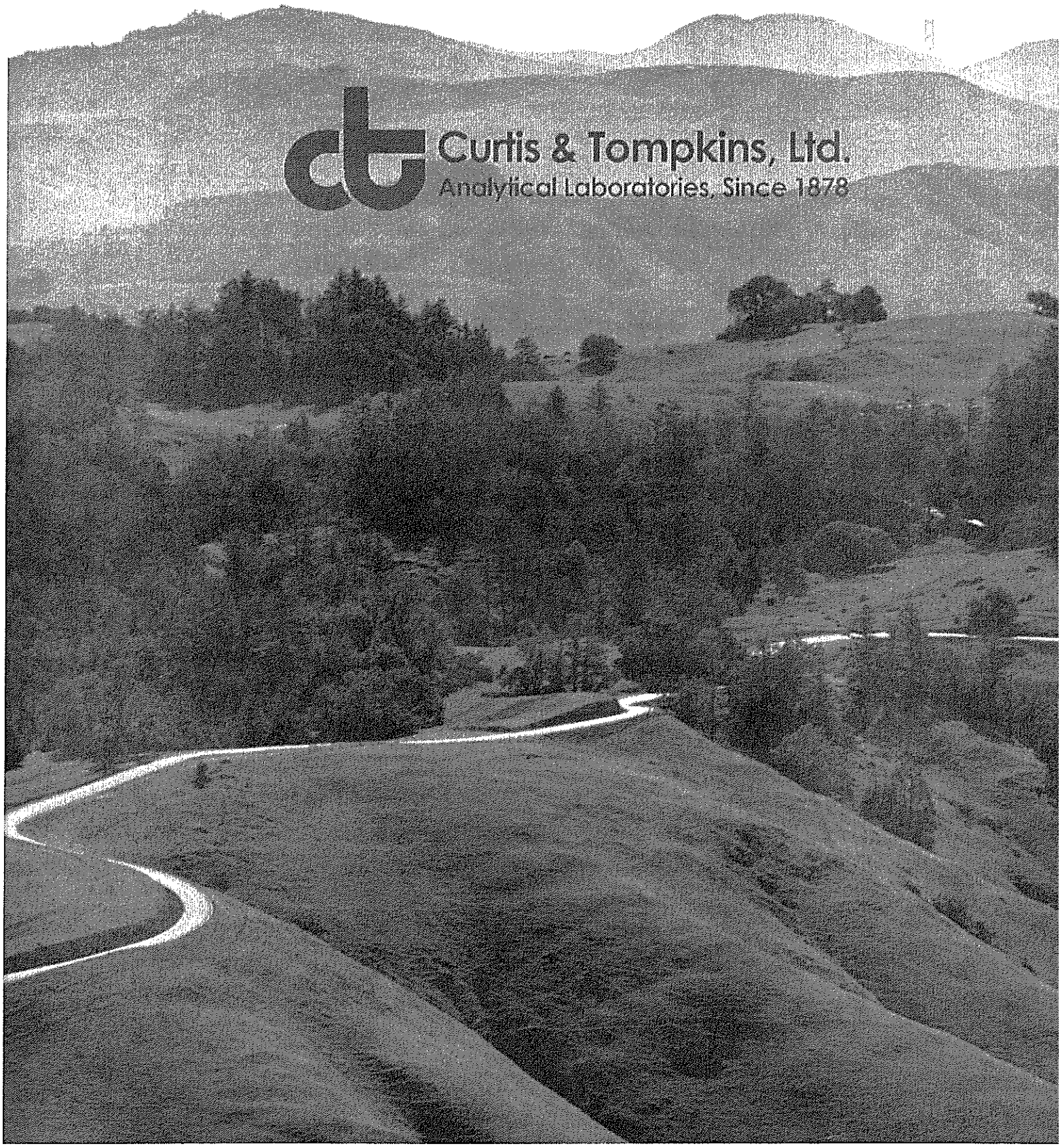
Grid Location and Start Point		Grid Sample #	X, Y Location on Grid Sampled	Sample ID #	Composite Sample #	Comments - Notes
	10 Wipes with Ha	7	Blank	59	16	
		8	Blank	60		
		9	Blank	61		
		10	Blank	62		

General Tank Wall and Valve Description						
Wall		**Section Description**	**Width**	**Height**	**Area (FT2)**	**# of Samples per Wall**
Side A - Driver View	Side	Full Rectangular Grid	42.1	10.2	427.8	15
Side B - Rear View	End	Full Rectangular Grid	8.0	10.2	81.1	3
Side C - Passenger View	Side	Full Rectangular Grid	42.1	10.2	427.8	15
Side D - Front View	End	Full Rectangular Grid	8.0	10.2	81.1	3
Side E - Top View	Top	Full Rectangular Grid	42.1	8.0	335.8	12
Side F - Bottom View	Bottom	Full Rectangular Grid	42.1	8.0	335.8	12
				Totals	**1689.5**	**60**

Wall - Valve Location	**Opening #**	**Description**
Side B - Rear View	1	Valve Center Bottom
Side C - Passenger View	2	Manway Left Side Bottom
Side E - Top View	3	Manway Center close to side
Side E - Top View	4	Valve behind Manway
Side E - Top View	5	Next Valve to Right
Side E - Top View	6	Next Valve to Right
Side E - Top View	7	Unknown Valve in far left Corner
Side D - Front View	8	Manway
Side D - Front View	9	Valve below and left of Manway
Side D - Front View	10	Valve below and just right of center of Manway
Side D - Front View	11	Valve in bottom center of Tank
Side D - Front View	12	Valve to right of bottom center valve

Attachment Three

Curtis and Tompkins Analytical Report – 236157


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 236157
ANALYTICAL REPORT

Otis Institute	Project : STANDARD
185 Berry Street	Location : PCB Alternative Sampling Plan
San Francisco, CA 94107	Level : II

Sample ID	Lab ID
COMPOSITE SAMPLE 1	236157-001
COMPOSITE SAMPLE 2	236157-002
COMPOSITE SAMPLE 3	236157-003
COMPOSITE SAMPLE 4	236157-004
COMPOSITE SAMPLE 5	236157-005
COMPOSITE SAMPLE 6	236157-006
COMPOSITE SAMPLE 7	236157-007
COMPOSITE SAMPLE 11	236157-008
COMPOSITE SAMPLE 12	236157-009
COMPOSITE SAMPLE 13	236157-010
COMPOSITE SAMPLE 14	236157-011
COMP SAMPLE 15 BLANK	236157-012
COMP SAMPLE 16 BLANK	236157-013

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Trog Bobor
Project Manager

Date: 05/17/2012

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	236157
Client:	Otis Institute
Location:	PCB Alternative Sampling Plan
Request Date:	05/10/12
Samples Received:	05/10/12

This data package contains sample and QC results for thirteen wipe samples, requested for the above referenced project on 05/10/12. The samples were received cold and intact.

PCBs (EPA 8082):

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. Low surrogate recoveries were observed for TCMX in many samples. Low surrogate recoveries were observed for decachlorobiphenyl in COMPOSITE SAMPLE 4 (lab # 236157-004), COMPOSITE SAMPLE 5 (lab # 236157-005), and COMPOSITE SAMPLE 6 (lab # 236157-006). No other analytical problems were encountered.

CHAIN OF CUSTODY

Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1878

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Berkeley, CA 94710

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Fax (510) 486-0532

Page ____ of ____

Chain of Custody # ____

C&T LOGIN # 236157

Project No: PRJ2012-0036
Project Name: PCB Alternative Sampling Plan
Project P. O. No: above
EDD Format: Report Level ☐ II ☐ III ☐ IV
Turnaround Time: ☐ RUSH ☒ Standard

Sampler: Rachel Yeddin
Report To: Troy Christensen
Company: Otis Institute
Telephone: 415 992 7458
Email: troy@otisinstitute.com

Lab No.	Sample ID.	SAMPLING		MATRIX			# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST
		Date Collected	Time Collected	Water	Solid	WIPE		HCl	H2SO4	HNO3	NaOH	None	PCBs
1	Composite Sample 1	5/10/12	1:31pm					Hexane					
2	Composite Sample 2		1:31 pm										
3	Composite Sample 3		1:43pm										
4	Composite Sample 4		1:43 pm										
5	Composite Sample 5		1:56pm										
6	Composite Sample 6		1:56pm										
7	Composite Sample 7		2:03pm										
8	Composite Sample 11		2:05pm										
9	Composite Sample 12		2:20pm										
10	Composite Sample 13		3:09pm										
11	Composite Sample 14		3:09pm										
12	Comp Sample 15 Blank		3:09pm										
13	Comp Sample 16 Blank		3:09pm										

Notes:

SAMPLE RECEIPT
☐ Intact
☐ Cold
☐ On ice
☐ Ambient

RELINQUISHED BY:
Rachel Yeddin DATE: 5/10 TIME: 1705
DATE: TIME:
DATE: TIME:

RECEIVED BY:
DATE: 5/10/12 TIME: 1605
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 236157 Date Received 5/10/12 Number of coolers 1
Client OTW INSTITUTE Project PCB alternative sampling plan

Date Opened 5/10/12 By (print) Micah Smith (sign)
Date Logged in 5/11/12 By (print) ICHIN (sign)

1. Did cooler come with a shipping slip (airbill, etc)_____ YES (NO)
Shipping info_____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many _____ Name_____ Date_____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received?_____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form)___ (YES) NO
6. Indicate the packing in cooler: (if other, describe)_____

☐ Bubble Wrap ☐ Foam blocks ☐ Bags ☒ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 4.0°C

☐ Samples Received on ice & cold without a temperature blank; temp. taken with IR gun

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present?_____ YES (NO)
If YES, what time were they transferred to freezer?_____
9. Did all bottles arrive unbroken/unopened?_____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ YES (NO)
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
17. Did you document your preservative check? _____ YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ YES NO (N/A)
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
If YES, Who was called?_____ By_____ Date:_____

COMMENTS
12) -008, -009, -011 } No sample time on label to agree w/ COC.

Rev 10, 11/11

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID: COMPOSITE SAMPLE 1
Type: SAMPLE
Lab ID: 236157-001

Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	41	27-144
Decachlorobiphenyl	41	18-120

Field ID: COMPOSITE SAMPLE 2
Type: SAMPLE
Lab ID: 236157-002

Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	21 *	27-144
Decachlorobiphenyl	22	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID: COMPOSITE SAMPLE 3
Type: SAMPLE
Lab ID: 236157-003
Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	23 *	27-144
Decachlorobiphenyl	22	18-120

Field ID: COMPOSITE SAMPLE 4
Type: SAMPLE
Lab ID: 236157-004
Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	15 *	27-144
Decachlorobiphenyl	17 *	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID:	COMPOSITE SAMPLE 5	Analyzed:	05/15/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-005		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	10 *	27-144
Decachlorobiphenyl	13 *	18-120

Field ID:	COMPOSITE SAMPLE 6	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-006		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	18 *	27-144
Decachlorobiphenyl	16 *	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID:	COMPOSITE SAMPLE 7	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-007		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	17 *	27-144
Decachlorobiphenyl	23	18-120

Field ID:	COMPOSITE SAMPLE 11	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-008		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	24 *	27-144
Decachlorobiphenyl	22	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID: COMPOSITE SAMPLE 12
Type: SAMPLE
Lab ID: 236157-009

Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	32	27-144
Decachlorobiphenyl	33	18-120

Field ID: COMPOSITE SAMPLE 13
Type: SAMPLE
Lab ID: 236157-010

Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	49	27-144
Decachlorobiphenyl	86	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID:	COMPOSITE SAMPLE 14	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-011		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	131	27-144
Decachlorobiphenyl	112	18-120

Field ID:	COMP SAMPLE 15 BLANK	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-012		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	56	27-144
Decachlorobiphenyl	52	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Sampled:	05/10/12
Units:	ug/s	Received:	05/10/12
Diln Fac:	1.000	Prepared:	05/11/12
Batch#:	186472		

Field ID:	COMP SAMPLE 16 BLANK	Analyzed:	05/11/12
Type:	SAMPLE	Cleanup Method:	EPA 3665A
Lab ID:	236157-013		

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	65	27-144
Decachlorobiphenyl	49	18-120

Type:	BLANK	Analyzed:	05/14/12
Lab ID:	QC639380	Cleanup Method:	EPA 3665A

Analyte	Result	RL
Aroclor-1016	ND	2.5
Aroclor-1221	ND	5.0
Aroclor-1232	ND	2.5
Aroclor-1242	ND	2.5
Aroclor-1248	ND	2.5
Aroclor-1254	ND	2.5
Aroclor-1260	ND	2.5

Surrogate	%REC	Limits
TCMX	123	27-144
Decachlorobiphenyl	118	18-120

*= Value outside of QC limits; see narrative
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	236157	Location:	PCB Alternative Sampling Plan
Client:	Otis Institute	Prep:	EPA 3550B
Project#:	STANDARD	Analysis:	EPA 8082
Matrix:	Wipe	Batch#:	186472
Units:	ug/s	Prepared:	05/11/12
Diln Fac:	1.000		

Type: BS
Lab ID: QC639381
Analyzed: 05/14/12
Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	5.000	5.159	103	72-120
Aroclor-1260	5.000	5.022	100	69-124

Surrogate	%REC	Limits
TCMX	111	27-144
Decachlorobiphenyl	118	18-120

Type: BSD
Lab ID: QC639382
Analyzed: 05/11/12
Cleanup Method: EPA 3665A

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	5.000	4.395	88	72-120	16	20
Aroclor-1260	5.000	5.215	104	69-124	4	20

Surrogate	%REC	Limits
TCMX	69	27-144
Decachlorobiphenyl	82	18-120

RPD= Relative Percent Difference

ATTACHMENT B

MATERIAL SAFETY DATA SHEET

Penetone® Corporation, 700 Gotham Parkway, Carlstadt, NJ 07072

POWER CLEANER® 155

Date Prepared: July 2, 2004
MSDS No.: 1870-407B

SECTION 1 PRODUCT IDENTIFICATION & EMERGENCY INFORMATION

PRODUCT NAME: POWER CLEANER 155
GENERAL USE: Cleaner, degreaser
PRODUCT DESCRIPTION: Liquid alkaline cleaner
GENERIC INGREDIENTS: Water, builders, surfactants, chelate

EMERGENCY TELEPHONE NUMBERS: **PENETONE 201-567-3000**
CHEMTREC 800-424-9300

SECTION 2 HAZARDOUS INGREDIENT SECTION

This product is nonhazardous as defined in 29 CFR1910.1200.

OSHA HAZARDOUS INGREDIENTS

	EXPOSURE LIMITS 8 hrs. TWA (mg/m³)		
CAS#	OSHA PEL	ACGIH TLV	Supplier

Contains no hazardous materials

SECTION 3 HEALTH INFORMATION & PROTECTION

EMERGENCY OVERVIEW:

Clear liquid with mild odor
Can be irritating to skin and eyes.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT:
Irritating to the eyes on contact only.

SKIN CONTACT:
Frequent or prolonged contact may irritate or dry the skin and cause dermatitis. Skin contact may aggravate an existing dermatitis condition.

INHALATION:
Inhalation of spray mist may cause irritation to the respiratory tract.

INGESTION:
Ingestion may cause irritation to the digestive tract and diarrhea.

FIRST AID MEASURES:

EYE CONTACT:
Flush eyes with large amounts of water. See physician immediately.

SKIN CONTACT:
Flush skin with large amounts of water. Remove contaminated clothing and launder before reuse. If skin irritation develops or persists, consult physician.

INHALATION:
Remove person to fresh air. Administer oxygen or artificial respiration as needed. Call a physician immediately.

INGESTION:
If swallowed, give plenty of water or milk. Call a physician immediately.

WORKPLACE EXPOSURE CONTROLS:

PERSONAL PROTECTION:
Splash proof goggles are recommended for all workplace conditions. Rubber gloves are recommended. When spraying this product, rubber boots, aprons, gauntlets, or rain gear should be worn depending on operations.

VENTILATION:
None needed under normal use conditions. If the product is being sprayed, a dust mask or particle respirator is recommended.

SECTION 4 FIRE & EXPLOSION HAZARDS

FLASH POINT: None to boiling point (TCC, COC)
FLAMMABLE LIMITS: Not applicable
AUTOIGNITION TEMPERATURE: Not determined

GENERAL HAZARD:
This is a water based product and presents no unusual hazards in a fire.

FIRE FIGHTING:
Cool containers with water.

HAZARDOUS COMBUSTION PRODUCTS:
Smoke, fumes, and oxides of carbon, nitrogen, phosphorus, and sulfur.

SECTION 5 SPILL CONTROL MEASURES

LAND SPILL:
For small spills, use absorbent material such as towels or absorbent powders. Put all material into proper waste disposal container with lid tightly covered. For larger spills, dike spill, recover free liquid, and use absorbent material to dry area. Rinse area with water. Put all material into appropriate waste containers.

WATER SPILL:
Product is water based and water dilutable. Surfactants used in this product are biodegradable. Localized high concentration of product may cause fish kills, but no persistent or long term effects will result. Check with local environmental regulatory agencies for reporting requirements.

SECTION 6 HANDLING & STORAGE

STORAGE TEMPERATURE, °F: ambient. DO NOT STORE ABOVE 120° F. KEEP FROM FREEZING.

GENERAL: Do not store near strong acids.

SECTION 7 TYPICAL PHYSICAL & CHEMICAL PROPERTIES

BOILING POINT, °F:
about 212
EVAPORATION RATE, Acetone = 1:
equal to water
SOLUBILITY IN WATER:
soluble
SPECIFIC GRAVITY at 75°F:
1.13
ODOR AND APPEARANCE:
Clear liquid with mild odor

VAPOR PRESSURE, mm Hg at 20°C:
equal to water
VAPOR DENSITY (Air = 1):
equal to water
WT% ORGANIC VOLATILES:
0
pH:
12.4-12.6

SECTION 8 REACTIVITY DATA

GENERAL:
This product is stable and hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:
Strong acids.

SECTION 9 REGULATORY INFORMATION

DEPARTMENT OF TRANSPORTATION (DOT):
PROPER SHIPPING NAME:
NONHAZARDOUS (nonregulated) MATERIAL
HAZARD CLASS: none
IDENTIFICATION NUMBER: none **PACKING GROUP:** none
LABEL: not required

FLASH POINT: None-to-boil **pH:** 12.4-12.6

TSCA: The ingredients in this product are listed on the TSCA inventory.

CERCLA:
This product contains no reportable CERCLA materials. Contact local authorities to determine if there may be other local reporting requirements.

RCRA HAZARD CLASS:
Nonhazardous waste

SARA TITLE III:

311/312 HAZARD CATEGORIES:
Acute health

313 REPORTABLE INGREDIENTS:
None

NEW JERSEY RIGHT-TO-KNOW INFORMATION:

This product contains water (CAS# 7732-18-5), sodium xylene sulfonate (CAS# 1300-72-7), tripotassium phosphate (CAS# 7778-53-2), tetrapotassium pyrophosphate (CAS# 7320-34-5), and trisodium n-hydroxylethylethylenediamine triacetate (CAS# 139-89-9).

CALIFORNIA PROPOSITION 65 INFORMATION:

This product does not contain any chemicals recognized by the state of California to cause cancer and/or birth defects or reproductive harm.

SCAQMD INFORMATION:

Is there a photochemically reactive material present? No
What is the % by volume of photochemically reactive material? 0
What is the VOC content? 0
What is the vapor pressure of VOC's? 0

SECTION 10 NOTES

HAZARD RATING SYSTEMS:

	HMIS	NFPA
HEALTH	1	1
FLAMMABILITY	0	0
REACTIVITY	0	0

KEY
4 = Severe
3 = Serious
2 = Moderate
1 = Slight
0 = Minimal

REVISION SUMMARY:

Change in Section 7

SUPERSEDES ISSUE DATE:

February 2, 2004

FOR ADDITIONAL PRODUCT INFORMATION, CONTACT YOUR SALES ENGINEER
FOR ADDITIONAL HEALTH/SAFETY INFORMATION, CALL 201-567-3000